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A
FOURTEENTH
LETTER
TO SIR JOSEPH BANKS Baronet
President of the Royal Society,

ON THE
Subject of Cochineal Insects, discovered at Madras,

By JAMES ANDERSON M. D.

With a Copper Plate Engraving Annexed, of the different INSECTS mentioned in the Letters; from
the Drawings of BARON REICHEL.

Also an Engraving of the *Opuntia Major Spinulis obtusis mollibus, & innocentibus*, and the Plan of
a Nopalry in the Bishoprick of Guaxaca in the Kingdom of Mexico; Extracted from the Second
Volume of SIR HANS SLOANE'S HISTORY OF JAMAICA, for the use of GENTLEMEN in INDIA
who may be disposed to make Plantations, and are not in possession of that Work.

MILESIA MAGNO
VELLERA MUTENTUR, TYRIOS INCOCTA RUBORES.
VIRG. GEOR. LIB. 3.

MADRAS: Printed by CHARLES FORD.

MDCCLXXXVIII.



To Sir JOSEPH BANKS Baronet,
PRESIDENT of the Royal Society.

DEAR SIR,

I Have the pleasure to acquaint you that Mr. Kincaid of this Establishment on a voyage to Europe by the way of China, has found a species of *Cactus* at Canton of which I have received two very healthy plants out of three which had been sent.

As far as I can speak to plants that are not in Flower this is the *Cactus Cochinitifer*; and the pains taken to discover, dispatch, and bring them here, as well as the hopes of getting more from the same place, induce me to insert the Letters that accompanied them.

MY DEAR SIR,

"I have very great pleasure in informing you, that I am in hopes this will be delivered with three plants of what I suppose to be the true *Opuntia Cochinitifera*—upon the young leaves are innumerable soft inoffensive prickles of the same green colour with the leaf, and about half an inch in length; the old leaves seem to be mostly without Prickles, a few short ones only appearing in the place where the Flowers have dropp'd off.—I believe it possesses all the other Characters of the Plant you are in quest of, but I am not Botanist enough to determine. I hope it will arrive safe, and if upon Culture you find it the same species, you may be supplied with any quantity from this place, where it is cultivated in the great men's gardens as a curiosity, principally for its Flowers.

"Chance threw one of these plants in my way; as I was gazing over the tops of the Houses, I perceived one of them growing on the top of a House, I then examined more accurately with a Spy-glass, and having marked the House; I went and asked permission to inspect it nearer, when I found it to be what I have described above, and upon enquiry was informed I could have some to purchase, which I immediately procured.—Thus chance directed me to what Mr. Duncan has been looking for in vain for a length of time; and in fact it is only by chance that any thing curious is to be obtained here, for all communication with the Country being cut off, prevents one from searching for any thing oneself, and unless you know the Chinese name, or can produce a sample of what you are in quest of, it is vain making any enquiries; no Gentleman here is the least acquainted with the language of China, and the Natives know very little English—if you should in future want any thing from this place, you had better send a sample of it, or if that is not to be done, send a Painting coloured as Nature, by this means there is probability of succeeding, but none without.

"By means of Mr. Duncan I have got the things sent in Captain Bruce's Ship the *Yar-mouth*, who promises to take care of them: the China name of the Prickly-pear plant is *Pau Wang*.

Canton Nov. 10th }
1787. }

"Farewell, and believe me &c.

"JOHN KINCAID."

DEAR SIR,

"I was favoured with yours by Mr. Kincaid and received the printed copies of the Letters regarding the Cochineal insect, for which I return you many thanks—Two or three plants of the *Opuntia* Mr. Kincaid has procured, which I have forwarded by Captain Bruce—from the appearance of the plants, I think it answers nearly to the description of the species you want—I here is great plenty of it here, and I shall send a few more plants by another conveyance.

Canton Nov. 10th }
1787. }

"I am with regard &c.

"JOHN DUNCAN.

Since

Since the receipt of the above I have had two more plants from the same hand by the Ship Indus, but one of them is gnaw'd by Rats or Vermine, and the other damaged by too much Water: had it occur'd to the gentlemen, that this plant is so succulent, it will live for some months without Earth, the quantity they mention might have afforded branches enough to have been pack'd amongst straw, in Baskets or Chests to lay out Plantations here without loss of time.

On some young Citron Trees just landed from China, I find a Coccus Insect more deeply interested between the abdominal rings than any of those on the Coast, which I have therefore called *Diacopeis*, and on a Tree which is very common here named *Wodier* by the *Tamuls*, some of the Branches are covered with a very Torpid Coccus Insect, to which I have given the Specific name *Narcoles*.

Being possess'd only of an old Copy of Linnæus, I do not find any genus under which the *Wodier* Tree can be brought, and will only remark, that its Leaves are oppositely and completely Pinnated. The *Racemi* issue from the trunk at the axis of the leaf. The Calyx *Tetrapetalous*,—The *Stamina* eight Filaments with Kidney-shap'd single Sessile *antheræ*, The *Germe*n terminates in two Sessile *Stigmata*, and becomes an oblong *Drupa* containing one seed.

As Mr. Kincaid's discovery at a place of such resort as Canton, stamps more value on the subject of these Letters, it comes within the plan I have laid out, to correct every error, and fill up as many omissions in the Journal of the two last years, as the experience of the present Season will warrant. A material circumstance here merits my particular notice, that I find the Coccus *Erion*, as well as the Coccus *Trichodes* on the *Hibiscus Rosa Sinensis*, and now perceive Figure No. 8. is a representation of the Coccus *Erion*, which is less hairy, and without the excrescence at the extremity of the abdomen, so remarkable in the Coccus *Trichodes*, as will appear by the Plates.—In my Letter of the Feb. 20th, too; the *Agaty* and *Jumbo* Trees are unnecessarily blended together, as no Coccus Insects have yet been found on the *Agaty*.

By the Ship *Bushridge* which left this place sometime ago, I acquainted you by addition to the 13th Letter, that the *Motchey* or *Painters Tree*, was the *Erythrina Orientalis*, and that I had found a Coco Nut Tree, *Cocos Nucifera* entirely covered with the Coccus *Erion*, which it is proper to notice here, for the information of those who had Copies of that Letter previous to her sailing.

A want of perspicuity being what I ever wish to avoid, I must state, that although the Trivial names of plants is sufficient to enable persons in this Country, to discover any of those I have had occasion to mention; yet wishing to be generally understood, I have likewise been solicitous to insert their Botanical Names, as I soon perceived a particular description of every plant on which Coccus Insects were found would far exceed the bounds of a Letter. Where I could fix on any authority I have in general quoted it; but in some cases the minuteness of Flowers, or the impossibility of finding plants in Blossom, has laid me under the necessity of using indefinite terms, as *Gramen Muticum Pratense* for the *Oopuncarugu*, which I had supposed an *Aira*; but finding the *Aira Subspicata* Bearded, and the leaf Plain, I shall only observe, it is the most common Pasture for Horses here, being the most easily procured; and have no doubt the Drawings and Specimen, sent with the first Letters will afford you an adequate Idea of it.

However foreign to the Subject of these Letters, it may be of use to add, that I have observed Horses in best plight that had Straw of the *Kaka-Tsjoalm* for Fodder; which being a *Triandria Digynia* may be an *Elymus*, but not the *Zizania* of Linnæus; they likewise prefer *Argum-Pilley*, *Agrostis Rad-ata*, and *Mattunga-Pilley*, *Agrostis Cruciata*, to the *Oopuncarugu*; In the *Systema Naturæ*, Published in 1770, the *Stigmata* of the *Agrostis* is *Longitudinaliter hispida*, and differs from the *Genera Plantarum* Printed at VIENNA in 1767. Where authorities differ from themselves and from Nature, I shall hold by the *Tamul* Name, and my own observations.

Doctor Russell thinks the *Ammam Patcherichi Poondoo*, is the *Euphorbia Hirta*, and not a *Parietaria* as I had supposed from the habit of the plant, and finding it *Tricoccous* I have thought proper to admit this amendment in conformity to the Sexual-System.

The *Poorfa Tree* having the exterior *Calyx Triphyllous*, I considered a *Malva*, but Dr. Russell whose knowledge in Botany is more extensive, says it is the *Hibiscus Populneus*, or *Bupariti* of the *Hort. Mal.* and that latter Botanists have called it *Thespesia Populnea*, for reasons he is not acquainted with.

It may for aught I see be removed from both these *Genera*, and the name *Thespesia* continued; because a Milky juice which issues from any wound of the unripe Fruit, is serviceable like some other vegetable astringent juices, to check that *Species* of *Herpes* called a Ring-worm.

The *Tamuls* distinguish two kinds (*viz*) the *Phu Poorfa*, or Flowering; and *Kay Poorfa*, or Frutescent *Poorfa*; which last only, brings the Seeds to maturity and capable of vegetation; I shall therefore in future be understood by the name *Thespesia Populnea Diœcia*.

In the generation of vegetables there exists considerable variety, (*e. g.*) the *Musa* or Plantain cultivated here by Suckers, will never produce Flowers or Fruit, if the Sucker is removed before the Parent stock has Flowered.

The Timber of the *Poorja Tree* is strong, tough, and of a smooth even grain, like the wood of the Apple or Pear Tree, and not being very heavy is the most proper Timber in this Country, for Naves, and Fellies of Wheels, for Wheel Carriages.

With regard to the *Erythrina*, as *Linnaeus* mentions a difference in the Colour of the prickles of the Oriental and Occidental, I have been guided by that distinction—it is called the *Motchey* or *Painters Tree*, a species of *Painters* called *Motcheymen*, finding it the most proper in the construction of their works, in Toys, Scabbards of Swords, and Trunks, for which the lightness of the wood, almost equal to that of Cork, renders it very fit—Two or three of these Trees tied together, forms the water conveyance called *Catamaram*.

Its beautiful Red Flowers are used as Festoons and garlands at Weddings, from whence the *Tamuls* call it the wedding *Mouricu*.

The *Mardana Tree* mentioned in Letter tenth was marked *Poligamia Monœcia Terminalia*, by Doctor Koning, from drawings of it which I laid before him; the *Ara Nellicay* or *Gheramela* must be the *Averrhoa Acida*, although I can find only an octofid sessile stigma in the *Umbilicus* of the *Drupa*, but no *Filaments* or *Anthææ*: I must likewise add, that having lately seen some rude Engravings of the *Kirmes* on the *Ilex* in a History of Drugs, translated from the French by Dr. Hill, they appear so like the *Chloëon* on the grass, I have my doubts whither *Linnaeus* may not have given the Character *Saltatoria* to the *Kirmes*, on account of the greater activity of the male Fly in this genus, than those of the genus *Coccus*, which farther observation confirms.

A material difficulty in curing the *Chloëon* is the trouble of Picking off the silk *Cacoon*, with which it is covered, and this I think may now be unnecessary, and that it will be sufficient to kill the Insects by two or three days Immersion in Vinegar, and afterwards dry them in the Sunshine, without taking the trouble to remove their silky Envelope, as is practised with the *Kirmes*; to which the *Chloëon* likewise bears an affinity in its nature as a Dye, seeing it penetrates into the fibre of Wool.

The great number of *Parasitical Insects* as well as *Parasitical Plants*, leads me to set aside the Caterpillars, mentioned in the former Letters; nor will the circumstance of finding them within the *Cacoons* of the *Chloëon*, preserve their connection with the species, seeing I have since found similar Caterpillars on the leaves of Plants, where there was no *Coccus* Insects; many Insects are found within the pulp of different kinds of Fruit, in the rind of which no perforation can be traced.

A more intimate connection may be perceived, where we are certain there is no affinity of species, (*e. g.*) Horses here are subject to blindness, from a worm in the *Aqueous humor* of the Eye, which
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in shape and activity resembles a Snake. In the Fish called *Bonito*, I have often found a Maggot in size, shape, and colour, resembling a grain of boiled Rice, pervading every part of its substance. The *Dracunculus* worm issues not only from the Legs and Feet of Men, but likewise from the Breasts and Genitals as I have sometimes seen. A man named ROBERT MASTERS in the year 1758 died of the Scurvy at Sea on board the Ship *Drake* Captain Fisher, who had during his illness the *Morbus Pediculofus* to that degree, that the *Pediculi* having penetrated through both the *Cuticula* and *Cutis*, lodged themselves in the *Cellular Membrane*, and resisted the use of Bathing in salt water, as well as the application of *Phlogistic* and *Mercurial* remedies.

It is time however to return to the subject, and state the situation these Botanical amendments and further discoveries, have produced on the arrangement of the Insects.

- 1st, The *Chloëon*, or *Kirmes Charomandensis*, is found on the *Oopuncarugu*.
- 2d, The *Coccus Oogenes*, on the *Phyllanthus Emblica*, *Euphorbia Hirta*, *Menispermum Cordifolium* and *Thespesia Populnea*.
- 3d, The *Coccus Trichodes*, on the *Psidium Guajawa*, *Annona Squamosa*, *Solanum Lycopersicon*, *Hibiscus Rosa Sinensis* and *Phaseoli*.
- 4th, The *Coccus Erion*, on the *Robinia Mitis*, *Ficus Maxima*, *Erythrina Orientalis* and *Cocos Nucifera*.
- 5th, The *Coccus Micro-ogenes*, on the *Vitis Venifera* and *Galega Prostrata*.
- 6th, The *Coccus Koleos*, on the *Solanum Melongena*.
- 7th, The *Coccus Diacopeis*, on the *Citrus Sinensis*.
- 8th, The *Coccus Narcodes*, on the *Wodier*.

It is of consequence to observe that only one of these Insects—The *Coccus Trichodes*, is found on a Plant of the class *Icosandria*, and that only the *Chloëon*, *Coccus Oogenes*, and *Micro-ogenes* possess much red colour, the rest being almost of the colour of the Bark or Leaves on which they are found, excepting the *Erion*, some of the full grown of which I have lately found on the *Erythrina* of a strong red colour.

To ascertain the identity of the *Coccus Oogenes*, *Trichodes*, and *Erion*, more fully, I have transposed them from one Plant to another, through all the Plants on which they are respectively found.

For St. George,
Jan. 28th 1788.

I am with esteem
Dear Sir,
your very obedient Servant,
JAMES ANDERSON.

TYPOGRAPHICAL ERRORS.

Letter 1st, for *Oopungiriki* read *Oopuncarugu*. Letter 2d, *Salicornia* read *Salicornia*. Letter 3d, *Glaß* read *Grass*. *Hebiscus* read *Hibiscus*. Letter 5th, *Cochinlifer* read *Cochinilifer*. *Dellinius* read *Dillenius*. Letter 9th, *Eighty miles* read *Ninety miles*. *Ficus Maximus* read *Ficus Maxima*. "In my Letter of April 26th, read "In my Letter of May 27th, Letter 10th, for "In my last Letter" read "In my Letter of July 18th." *Terminialia* read *Terminalia*. *Minispermum* read *Menispermum* throughout. Letter 11th, *Spondius* read *Spondias*. *Hernandez Rheda* and *Lyncius* read *Hernander*, *Reccho* and others, Letter 12th, *Portia* read *Poorja*. Letter 13th, *Ficus Maximus* read *Ficus Maxima*.

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